



Development of Learning Media Assisted by Adobe Flash Application on KPK and FPB Material in Elementary School

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Abstract. The rapid advancement of technology can be felt in the field of education. This drives the development of innovative learning media, including the use of Adobe Flash CS6 applications for multimedia. This research aims to create learning media by utilizing Adobe Flash CS6 for teaching the concepts of LCM (Least Common Multiple) and GCD (Greatest Common Divisor) in Elementary School. (3), assess the effectiveness of the media, and gather positive feedback from teachers and students regarding its use. Additionally, this learning media is validated by media experts and material experts from universities. This study employs a Research and Development (R&D) approach with the ADDIE model (Analyze, Design, Development, Implementation, Evaluation) to develop effective learning media using Adobe Flash CS6. The results of this study show that the Adobe Flash CS6-based learning media is deemed suitable for use, with assessments from media experts and subject matter experts reaching 93% (very feasible). Positive feedback from teachers reached 96.67% (very engaging), and from students, it was 96.33% (very good criteria).

Keywords: Adobe Flash CS6, KPK and FPB, Learning Media

1 Introduction

The rapid advancement of technology in today's world is unavoidable. Its impact is felt across various sectors, including education. Education is a fundamental part of modern society, with schools playing a central role in the process of educating the younger generation [1]. The advancement the use of technology for communication and information education allows for the creation of learning materials in various formats to meet the needs of both teachers and students [2]. Learning media functions as an intermediary that transmits educational messages. It is inseparable from the dynamics of teaching and learning, helping students understand the material taught by the teacher in order to achieve learning objectives [3].

Learning media refers to various methods and tools used to deliver messages that stimulate thinking, arouse interest, attention, and motivation in students, enabling them to acquire knowledge, skills, or attitudes in line with the educational goals [4]. Learning media is anything used to convey messages to the recipient with the aim of inspiring

thoughts, emotions, attention, and interest in students, so that the learning process can take place effectively and achieve the intended learning outcomes [5]. The learning process sometimes faces challenges, where the availability of media and learning resources is still insufficient [6].

The use of learning media that holistically integrates digital technology can enhance the efficiency and effectiveness of learning. Learning media that combine various digital media are referred to as multimedia-based learning media [6]. This is in line with the opinion of Muyaroah & Fajartia (2017), who stated that multimedia can have different meanings; however, in general, multimedia refers to the use of more than one type of media to present information [7]. The development of interactive multimedia-based learning media requires software that can manage multimedia objects and their interactivity effectively. One example of multimedia software that can be used is Adobe Flash CS6. Adobe Flash CS6 is a creative software used to create animations, web applications, and interactive content using Adobe's Flash technology[8].

In this study, Adobe Flash CS6 was chosen to create the learning media. This choice was based on various considerations, one of which is its ability to create vector graphics and lightweight animations, resulting in small file sizes. Children of elementary school age are generally at the concrete operational stage, where they are able to understand mathematical symbols but are not yet ready to grasp more abstract concepts [9]. Therefore, interactive learning media created with the help of Adobe Flash CS6 is highly suitable for use in learning. This is supported by Qistina et al. (2019), who stated that interactive multimedia using Adobe Flash CS6 is highly effective for implementation in the teaching and learning process [10]. Some advantages of the Adobe Flash CS6 application include its ability to create interactive buttons with options such as movie, button, or object. Adobe Flash CS6 can also be displayed on various media, such as DVDs, TVs, mobile phones, and other devices [11]. The Adobe Flash CS6 application excels because it offers a range of features that allow users to integrate images, sound, and animation simultaneously. Furthermore, this software has high-quality features, which makes it possible to store the learning media on mobile phones [12].

This software is capable of producing various mathematics learning media, including presentations, interactive CDs, and videos that can stimulate the understanding and interest of fourth grade students. The use of this media can change the perspective of mathematics as something abstract into a semi-concrete lesson.

An interview conducted on August 1, 2024 with one of the homeroom teachers at SD Negeri 100 Kendari showed that mathematics learning has not involved technology such as animation media because teachers are more familiar with conventional methods (not related to IT) and learning media regarding the KPK and FPB material have not been developed. The results of the researcher's initial observations on students at SD Negeri 100 Kendari, especially grade IV on the KPK (Least Common Multiple) and FPB (Greatest Common Factor) material, showed that students still had difficulty understanding the concept and felt bored in learning mathematics, which resulted in minimal student attention to the lesson.

2 Method

The type of research is development research with the aim of developing practical products to be applied in schools, and not just testing theories. This research was conducted using the ADDIE model with the stages of Analyze, Design, and Development. This research aims to create learning media by utilizing the Adobe Flash CS6 application for KPK and FPB materials elementary school assessing the effectiveness of the media, and exploring positive responses from teachers and students towards its use. The research instrument used a questionnaire. The questionnaire data will be analyzed using a Likert scale and using a percentage formula [13-15].

The product validation assessment in this study involved media experts and material experts from Halu Oleo University. This process aims to ensure that this product is suitable for use by students after passing validation from media experts and material experts, then a limited trial is carried out (15 students and 1 homeroom teacher at SD 100 Kendari).

3 Research Results

The core results of this study are to produce a learning media based on the Adobe Flash CS6 application containing KPK and FPB materials in elementary school. The product development process follows the ADDIE model consisting of Analyze, Design, and Development.

3.1 Analyze Stage

The initial analysis includes a needs analysis conducted by collecting important information about the use of learning media by teachers in grade IV of SD Negeri 100 Kendari. Furthermore, the analysis of student characteristics is conducted by adjusting the learning materials to be developed to suit the grade IV students of SD Negeri 100 Kendari. Next is the curriculum analysis, the researcher identifies Key Competencies (KI), Fundamental Skills (KD), and Performance Achievement Indicators (PK).

3.2 Design Stage (Design)

The design stage is carried out by collecting references, namely researchers collect references or information related to learning media assisted by the Adobe Flash CS6 application for KPK and FPB materials that will be developed. The next step is to create a flowchart and sketch (storyboard), which is done to determine the structure of the learning media, this acts as a guide for students and teachers to identify the elements presented in the learning media using the Adobe Flash CS6 application.

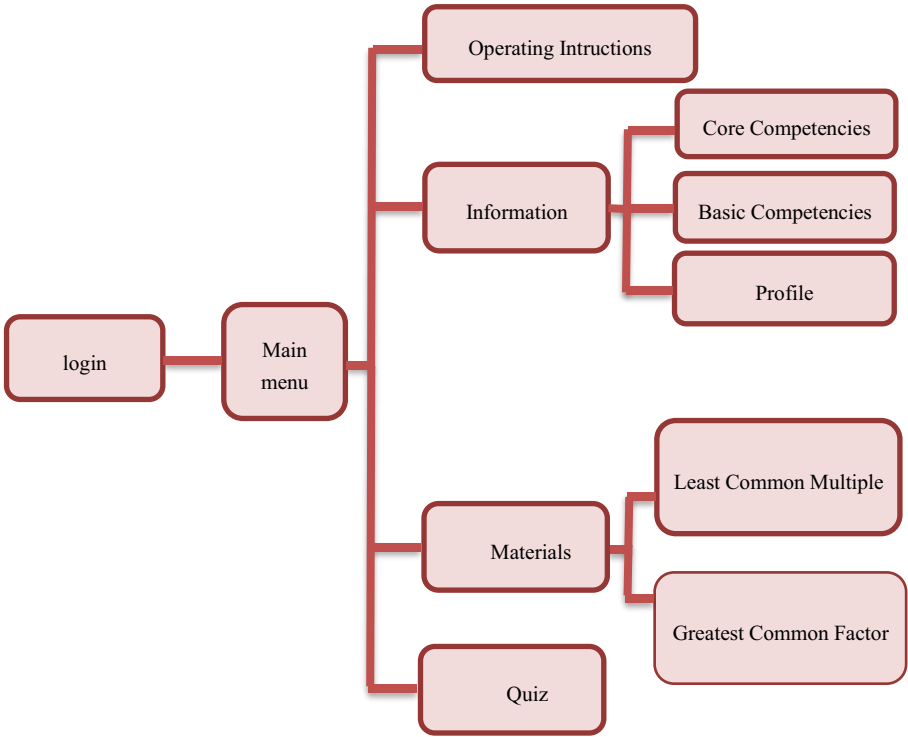


Fig. 1. Flowchart

The final step is to design an assessment instrument to assess the learning media that has been developed using Adobe Flash CS6 on the KPK and FPB materials. This instrument includes a validation sheet by material experts, media experts, and a response questionnaire to collect responses from teachers and students.

3.3 Development Stage

After the product design is complete, the researcher continues by developing learning media using the Adobe Flash CS6 application. This process involves the use of various references related to the material that will be presented in learning. The next step is validation by media experts and material experts to assess the feasibility of learning media based on the indicators listed in the validation sheet. After the session ends, teachers and students are asked to fill out a response questionnaire on the learning media based on the Adobe Flash CS6 application that has been created. This is done to obtain responses from teacher and learners toward the developed learning media.

Validation of learning media was carried out on August 9, 2024. Based on the validation results by media experts, the total value of 4 aspects was 60 and the average percentage was 93% with very feasible criteria.

Validation by material experts was carried out on August 9, 2024. Based on the validation results by material experts, the total value of 2 aspects was 42 and the average percentage was 93% with very feasible criteria.

The limited trial was carried out in one meeting, namely on August 12, 2024, involving one teacher and 15 students from SD Negeri 100 Kendari. Based on the results of the teacher's overall response, it obtained a score of 58 out of a maximum score of 60, thus achieving the criteria of being very interesting with a percentage of 96.67%. Based on the results of the overall student response, it obtained a score of 578 out of a maximum score of 600, thus achieving the criteria of being very interesting with a percentage of 96.33%.

Based on the results of the analysis of the validation of media experts, material experts and limited trials conducted, the developed learning media was declared feasible for use in learning at school.

4 Discussion

At the analysis stage, the researcher conducted a needs analysis, student characteristics analysis, and curriculum analysis. The results of the needs analysis obtained information that the mathematics learning media used in SD Negeri 100 Kendari (especially class IV) had never involved technology such as animation media in learning, this was because teachers were more familiar with conventional learning. Furthermore, an analysis of student characteristics was carried out, and information was obtained that class IV students of SD Negeri 100 Kendari were happy when directly involved with problems, and tended to understand better if the teacher connected concepts with objects or situations that had real or concrete properties. Another characteristic found was that students often felt enthusiastic when seeing new things and enjoyed utilizing learning materials that were equipped with colorful images that were relevant to the content of the material. This is in accordance with Piaget's view quoted by Basri (2018), which states that the academic characteristics of elementary school age children are at the concrete operational stage [9]. At this stage, children are able to understand mathematical symbols but still have difficulty understanding abstract concepts. Based on the results of the curriculum analysis, it was concluded that the KPK and FPB materials were materials whose questions were still considered difficult for students in elementary schools. The results of the needs analysis, student characteristics analysis, and curriculum analysis can be concluded that media development using the Adobe Flash CS6 application is needed to teach KPK and FPB materials.

The next step is the design stage which is carried out by collecting references, flowcharts and storyboards, and compiling assessment instruments. Interesting learning media with images and sounds can make students enthusiastic about learning and increase their curiosity. These material references are taken from various relevant sources such as books, journals, articles, and previous research. Next is the preparation of research instruments. The assessment instruments include validation sheets by material experts and media experts, as well as teacher and student response questionnaires.

The next stage is media development. The developed learning media has been validated by experts to determine the feasibility of the media. The results of the media expert validation reached a score of 60 with a percentage of 93% (very feasible). What needs to be improved is the moving cloud background that needs to be removed because it can make it difficult for students to focus on learning. So a revision was made to adjust the background to the material. Based on this, it can be said that the learning media developed using the Adobe Flash CS6 application is appropriate and feasible to be tested with several revisions. This is in accordance with the opinion of Riduwan (2018) namely in the reference for changing the score to a scale of five. The feasibility of the resulting learning media can be seen from four aspects, namely navigation, writing (text), appearance, and media presentation [13, 16]. After following the suggestions and comments from the validator (media expert and material expert) in the validation test, the revised learning media was then tested by one teacher (grade IV homeroom teacher) and 15 students in grade IV of SD Negeri 100 Kendari. The results of the trial showed that learning media based on the Adobe Flash CS6 application was effective when tested on a small scale.

5 Conclusion

The development of learning media using the Adobe Flash CS6 application follows procedures based on the ADDIE model which includes analysis, design and development stages. The feasibility of learning media for KPK and FPB materials as assessed by media experts and material experts reached the same average percentage, namely 93% (very feasible) for testing in schools. The trial results showed that the learning media developed received a positive response from teachers and students. Teacher responses to learning media reached an average percentage of 96.67% (very interesting), while student responses obtained a percentage of 96.33% (very interesting).

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